## Patent claims

1. A method for artificially ageing a catalyst device for use on a catalyst test bench for converting exhaust gases comprising at least one constituent from the group consisting of C-, HC- and NOx-containing constituents, characterized in that hot ageing gas which comprises at least one constituent from the group consisting of C-, HC- and NOx-containing constituents is allowed to flow through the catalyst device.

2. The method as claimed in claim 1, characterized in that the hot ageing gas used is an exhaust gas generated by combustion of a C-containing fuel.

3. The method as claimed in claim 2, characterized in that the hot exhaust gas is generated in a burner by combustion with combustion air.

4. The method as claimed in claim 2, characterized in that the hot exhaust gas is generated in a gas turbine.

5. The method as claimed in one of claims 1 to 4, characterized in that the hot ageing gas is passed through the catalyst device by means of a blower.

6. The method as claimed in one of claims 1 to 5, characterized in that the ageing gas is introduced into the catalyst device at a temperature of > 250°C.

7. The method as claimed in claim 6, characterized in that the ageing gas is introduced into the catalyst device at a temperature of > 700°C.

8. The method as claimed in claim 7, characterized in that the ageing gas is introduced into the catalyst device at a temperature of from approximately 1000°C to approximately 1250°C.

9. The method as claimed in one of claims 3 to 8, characterized in that the hot exhaust gas is generated during combustion operation with lambda > 1.

10. The method as claimed in claim 9, characterized in that the hot exhaust gas is generated during combustion operation with lambda > 1.5.

11. The method as claimed in one of claims 2 to 10, characterized in that the fuel used is a combustible C-containing fluid selected from the group consisting of gaseous and liquid fluids.

12. The method as claimed in claim 11, characterized in that the fuel used is low-sulfur fuel.

13. The method as claimed in claim 12, characterized in that a fuel with a sulfur content of < 10 ppm is used.

14. The method as claimed in claim 13, characterized in that a fuel with a sulfur content of < 5 ppm is used.

15. The method as claimed in one of claims 2 to 14, characterized in that the ratio of fuel to combustion air is varied in predetermined cycles.

16. The method as claimed in claim 15, characterized in that the catalyst device is subjected to different ageing gas compositions and ageing gas temperatures corresponding to a combined load cycle.

17. The method as claimed in claim 16, characterized in that the catalyst device is subjected to load corresponding to mixed vehicle operation.

18. The method as claimed in one of claims 1 to 17, characterized in that the catalyst device is subjected a number of times, in each case after an ageing step, to a diagnosis, in which the amplitude ratio of a post-cat sensor as a measure of the oxygen storage capacity is compared with a model, the model being matched to a relevant limit catalyst and a limit value being determined from the amplitude ratio between the current signal of the post-cat sensor compared to the modeled post-cat sensor signal, the post-cat sensor signal being taken as a measure of the oxygen storage capacity of the catalyst device.

19. The method as claimed in one of claims 1 to 18, characterized in that gas which emerges from the catalyst device is partially admixed with the ageing gas fed to the catalyst device, in order to be recirculated.

20. The method as claimed in one of claims 1 to 19, characterized in that the ageing gas fed to the catalyst device is cooled.

21. The method as claimed in claim 19 and 20, characterized in that the ageing gas fed to the catalyst device is cooled by gas emerging from the catalyst device.

22. The method as claimed in claim 21, characterized in that gas emerging from the catalyst device is admixed in cooled form with the ageing gas that is to be fed to the catalyst device.

23. The method as claimed in one of claims 20 to 22, characterized in that the temperature of the ageing gas fed to the catalyst device is varied by cooling independently of the setting of lambda during generation of the ageing gas.

24. The method as claimed in one of claims 1 to 23, characterized in that at least one component is admixed to the hot ageing gas in order to set a defined composition of the ageing gas.

25. The method as claimed in claim 24, characterized in that at least one component selected from the group consisting of C- and HC-containing gas constituents is admixed.

26. The method as claimed in one of claims 1, 5 to 8 and 16 to 25, characterized in that the ageing gas is generated synthetically.

27. The method as claimed in one of claims 1 to 26, characterized in that a catalyst device selected from the group consisting of a 3-way catalyst, an NOx catalyst, an oxidation catalyst, a reformer for reducing agent and a reformer for fuel cells is aged using the ageing gas.

28. An apparatus for artificially ageing a catalyst device (6) for use on a catalyst test bench for converting exhaust gases comprising at least one constituent from the group consisting of C-, HC- and NOx-containing constituents, characterized in that a device (1) for generating a hot ageing gas and a device (7) for passing the hot ageing gas through the catalyst device (6) are provided.

29. The apparatus as claimed in claim 28, characterized in that the device (1) for generating a hot ageing gas is a device for combustion of a C-containing fuel with combustion air.

30. The apparatus as claimed in claim 28 or 29, characterized in that the device (7) for passing the hot ageing gas through the catalyst device is a hot-air blower.

31. The apparatus as claimed in claim 28 or 29, characterized in that the device (7) for passing the hot ageing gas through the catalyst device is a suction jet pump.

32. The apparatus as claimed in one of claims 28 to 31, characterized in that a temperature sensor (8) is provided for measuring the temperature of the ageing gas that is to be fed to the catalyst device (6).

33. The apparatus as claimed in claim 32, characterized in that a device for controlling the temperature of the ageing gas that is to be fed to the catalyst device (6) is provided.

34. The apparatus as claimed in one of claims 28 to 33, characterized in that a device for partial recirculation of gas emerging from the catalyst device (6) to the ageing gas is provided.

35. The apparatus as claimed in one of claims 28 to 34, characterized in that a device for cooling the ageing gas that is to be fed to the catalyst device (6) is provided.

36. The apparatus as claimed in claim 35, characterized in that the device for cooling the ageing gas that is to be fed to the catalyst device (6) comprises a device (23, 25) for cooling recirculated gas emerging from the catalyst device (6).

37. The apparatus as claimed in one of claims 28 to 36, characterized in that an oxygen sensor (9) is provided at the outlet of the catalyst device (6) for the purpose of monitoring the catalyst device (6).

38. The apparatus as claimed in one of claims 28 to 37, characterized in that an oxygen sensor (8) is

provided for the purpose of monitoring the ageing gas that is to be fed to the catalyst device (6).